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REPORT

FROM THE

PROVISIONAL DIRECTORS

OF THE

LONDON (WATFORD) SPRING WATER COMPANY,

TO THE

SHAREHOLDERS AND THE PUBLIC,

WITH THE

FINANCIAL STATEMENT,

Submitted and approved at the General Meeting;

AND

MR. HOPE'S OPENING SPEECH

BEFORE THE

PARLIAMENTARY COMMITTEE.

1852.

COLLEGE OF SURGEONS OF ENGLAND

PRESENTED BY
the Directors of
the Company

REPORT

FROM

THE PROVISIONAL DIRECTORS,

FOR

PROMOTING THE BILL OF THE LONDON (WATFORD) SPRING WATER COMPANY, IN PARLIAMENT, IN THE SESSION OF 1852.

The Provisional Directors of the London (Watford) Spring Water Company for the Session 1852, have to lay before their Shareholders and the public the following report of their proceedings.

On Thursday, the 25th of March last, a motion for the second reading of the Bill was made in the House of Commons and was carried by a majority of three to one: 196 Members voting in favor of the Bill and 65 against it.

The Committee of the House of Commons appointed during the last Session to investigate the bills relating to the supply of water to the Metropolis, did not commence their labours until the 2nd of

April. The Government Bill, called "Metropolis Water Supply," with your bill and all other bills relating to the supply of Water to the Metropolis, both north and south of the Thames (10 in number), were referred to the same Committee. The West Middlesex Water Company were, during the progress of the inquiry, permitted to bring in a Bill to enable them to comply with the provision of the Government Bill by changing their point of supply to the Thames above Teddington Lock. For this purpose they were allowed to dispense with compliance with the standing orders, and other preliminary forms; they were also indulged with the privilege of taking precedence in Committee of the Bill of the London (Watford) Spring Water Company, though the latter had necessarily been brought in at an earlier period: thus it happened that the investigation of the merits of your Bill before the Committee did not commence until Tuesday, the 15th of June.

In consequence of this delay and the early close of the Session after the case had been brought before the Committee, there was not sufficient time to admit of the investigation being completed. This is the more to be regretted when it is remembered that the Bill was first introduced into Parliament in the year 1850, and was then rejected on the second reading—not on its merits, but,—from an apprehension on the part of the Government of the day, that the passing of a new Water Bill might interfere with a general Bill then in contemplation by them, but since abandoned. From this and other obstacles the Company have never before been able even to obtain a hearing in Parliament, although uniformly and warmly supported by the inhabitants of the Metropolis in general, and especially by those of the districts embraced in the Bill.

In an able opening speech before the Committee, your Counsel, Mr. Hope, made a clear and intelligible statement of the nature of the project, and proposed operations of the Company. Thirty-eight witnesses in favor of the Bill were subsequently examined, and other valuable evidence was at command, which, from the limit as to time could not be heard. The Committee could therefore come to no decision, and were only able to report the evidence as far as it was taken to the House of Commons.

The whole of this evidence has been published in a Blue Book, for the use of the public. Your Directors would refer to it, confident that an attentive examination will shew that the statements put forth in the opening speech of your Counsel, a copy of which is attached to this Report, and in the prospectus and reports of the Company, have been fully sustained.

A searching investigation into the quality of the Thames Water, even when taken above Teddington Lock, and after filtration, has proved that the amount of dead and decaying animal and vegetable matter contained in it are such as to render it unwholesome; 19 different species of living animals and also fungi having been shown by Dr. Lankester, F. R. S. and Dr. Redfern, to abound in such water.

Your Directors believe that the evidence given before Parliament, demonstrates that the source of the water proposed to be resorted to by the Company, is fully adequate in quantity, and pre-eminent from its excellent quality.

The number of Shares taken in the Company on which the deposit has been paid, amounts to 12,387. Your Directors annex the Financial Statement, and will be enabled to return to the Shareholders the surplus subscribed beyond 11s. 6d. per Share. This return will be made as soon as it is possible to withdraw from the Accountant General the deposit lodged with him according to the requirements of the standing orders of Parliament, which will be early in November.

The expenses would have been much greater, if various scientific and other persons had not tendered a large amount of voluntary support. It is anticipated that the expenditure of labour and money already incurred, will have the effect hereafter of materially facilitating the progress of the Bill through Parliament.

Under the existing law, it is impossible to carry the Company forward without commencing the preliminary Parliamentary proceedings *de novo*; but the Shareholders can do this if they see fit, and renew their application for an Act in the ensuing Session.

Your Directors, in conclusion, have to state, that their opinion is unchanged as to the advantages likely to result from the establishment of this Company, and the carrying out of the undertaking, which they believe would materially conduce to the comfort, and to maintain the health of the inhabitants of London.

Dated 28th September, 1852.

Temporary Offices of the Company,
39, *Moorgate Street.*

LONDON (WATFORD) SPRING WATER COMPANY,

Financial Statement from November 1851, *to November* 1852.

To Deposits on 12,387 Shares, @ 27s. 6d. per Share	£17,032 2 6
To Sir Samuel Scott, Bart., & Co., for sum advanced by them on the responsibility of the Provisional Directors, for the use of the Company, as a Loan, @ 5 per cent.	2,000 0 0
To Return of Deposit from the Court of Chancery	13,138 15 0
	£32,170 17 6

By Payment to the Accountant General:— Deposit required by the Standing Orders of Parliament			£13,138 15 0
By General Expenses, viz.:—			
Advertizing	£359 9 5		
Canvassing, &c.	291 13 1		
Printing, Stationery, &c.	173 11 0		
Office Furniture	33 14 6		
Ditto Rent to 1st June	15 0 0		
Salaries—Clerks, &c.	153 0 0		
Petty Disbursements	93 14 0		
		1,120 2 0	
By Parliamentary Agents' Expenses, viz.:—			
House Fees	£415 0 0		
Printing Bill Contract, &c.	145 2 0		
Ditto proportion of Evidence	63 0 0		
Proportion of Short Hand Writer	66 2 7		
Sundry other payments—Cab Hire, Messengers, &c.	135 6 9		
		824 11 4	
By Solicitors' Expenses, viz.:—			
Expenses to Second Reading	£500 0 0		
Counsels Fees	729 2 0		
Stationers work, Copying, &c.	160 0 0		
Getting up Evidence, &c.	116 11 0		
Travelling and other Incidentals	52 5 10		
		1,557 18 10	
By Engineers' Expenses, viz.:—			
Expenses to Second Reading	£1,000 0 0		
Maps, Plans, Surveys, Estimates, Assistants, Travelling, and Incidental Expenses	905 11 7		
Cash paid to Witnesses	568 3 9		
		2,473 15 4	
By Payments to Sundry Witnesses, (Thirty-eight in number,) who gave their Evidence before the Parliamentary Committee.—*See Minutes of Evidence*		851 18 6	
By Interest on £2,000 from 13th January to 10th November, 302 days, @ 5 per cent.		82 14 10	
By Contingencies to same date, say		211 9 8	
			7,122 10 6
By Repayment of Sum advanced by Sir Samuel Scott, Bart., & Co.			2,000 0 0
Balance, equal to a return of 16s. per Share on 12,387 Shares taken up			9,909 12 0
			£32,170 17 6

At a Meeting of the Shareholders of the Company, held at the London Tavern, Bishopsgate Street, on Thursday, the 14th October, 1852,

HY. THOS. HOPE, Esq., in the Chair;

The Report having been read, the following Resolutions were carried unanimously:—

That the Report of the Provisional Directors and Financial Statement of the affairs of the Company now read, be received and adopted.

That the best thanks of the meeting are due, and are hereby tendered, to the Directors, for the very able and satisfactory manner in which the matters devolving upon them have been conducted.

That with the view of settling and discharging the expenses incurred in the past session, and of taking immediate measures to reconstitute the Company and making a renewed application to Parliament in the ensuing session, the present Company be, and is hereby declared to be, dissolved.

The Chairman having left the chair, it was proposed and carried:—

That this meeting do resolve itself into a meeting for establishing the Company "*de novo*," and that Sir Robert Price, Bart., M.P., be requested to take the chair.

Resolved:—That the proposed new Company be duly registered under the title of the "London (Watford) Spring Water Company," and that the Directors of the old Company be requested to act as Directors of the new Company, with power to add to their number such gentlemen as they may see fit, and to take such steps as they may think requisite to promote the interests of the Company, and to procure an Act of Incorporation in the ensuing Session of Parliament.

Thanks to the Chairman having been voted, the meeting adjourned.

B. RANKIN, *Secretary, pro tem.*

LONDON (WATFORD)
SPRING WATER COMPANY'S BILL.

PARLIAMENTARY COMMITTEE.

WM. BECKETT, ESQ., Chairman.

W. H. BARROW, ESQ.	JOHN ELLIS, ESQ.
W. T. MC CULLAGH, ESQ.	LORD SEYMOUR.

OPENING ADDRESS OF MR. HOPE, Q.C.

WILLIAM BECKETT, ESQ., IN THE CHAIR.

Friday, 11*th June*, 1852.

Mr. *Hope*.] I appear, sir, for the Watford Bill, whose case is really one of the hardest I have ever known. I am here to prefer a petition to you, that you will appoint as early a day as you can next week for hearing this case. I do not pretend that my clients hope to be able to carry this Bill through both Houses this year, but they have very great hope of being able to carry it through this Committee, and so far of placing it in a position which, under the circumstances in which many Bills will be left for the year, will probably lead to regulations such as were passed in 1841 for continuing Bills in the position they occupied at the close of the previous Session. That being the case, and we having, under an intimation which we received from you upon the 19th of May last, been led to expect that our case would be heard possibly even before the preambles of the Grand Junction and the West Middlesex Bills were disposed of, we have prepared our witnesses, we have brought them up from different parts of the country, and our case is ripe for hearing. We believe it will not be a case of great duration in point of evidence. The facts are within a comparatively narrow compass. I cannot pledge myself to the absolute duration of the inquiry; but we are so anxious to have the case heard by the Committee which has been so familiar with the whole case of water supply to the Metropolis, that we would anxiously urge upon you to do as much for hearing our case as can be done. Not only have we been, in one shape or another, before Parliament for three years, but at this moment we have some 50,000 inhabitants in the district traversed by the scheme, who are in pressing want of water. I need not tell you that the Government chemists who have reported upon the water supplied by the different Companies, have declared that beyond all doubt the chalk water which we propose to supply is entitled to preference over all other water. We have some 39,000 petitioners in favour of the Bill, and as to the opposition which has been offered to us in the form of petitions, apart from the opposition of the Companies, who have, in fact, no *locus standi* properly speaking, against us, the opposition is that of landowners and mill-owners, to whom we are ready to make the most ample concessions in the shape of protective clauses, we being thoroughly satisfied, that their theory is incorrect as to the effect upon the sources of supply to be resorted to by us, and that ours is correct. I do trust, therefore, that you will name an early day in order that our case may be gone into, and advanced as far as possible.

Chairman.] Were you in the room when it was intimated to us that Monday might close the West Middlesex case? We have agreed to take that case on Monday.

Mr. *Hope.*] Tuesday will do very well for us.

Chairman.] Then we will take it on Tuesday, provided we have finished the West Middlesex case.

Tuesday, 15*th June,* 1852.

Chairman.] Before we call upon you, Mr. Hope, to proceed with this Bill, the Committee wish to state to you how we are all circumstanced as to the limited time which may be placed at our disposal. The Committee themselves are quite willing to give you all the attention in their power, but it appears that we cannot certainly reckon upon having more than six days to devote to the case. We shall have to attend one day in the House in support of the General Bill. Saturday cannot be counted, and in next week we can only reckon up to Wednesday. That will be three days in this week and three days next week. It is matter for your consideration as regards the expense to your own Company, and also the expense to the opponents, whether you think we shall arrive at a point that will be of any use to you hereafter, because we understand the rule is this: supposing us to enter into the Preamble of the Bill, and not to get so far through it as to report upon it, the whole proceedings this year will be totally useless to you in a future Session. Therefore, as I said before, we are willing to devote our time to it; it is a matter for your very serious consideration, whether you will undertake the expense yourselves, and put your opponents to the expense of going into an investigation which may be wholly fruitless.

Mr. *Hope.*] I feel fully the kindness of tone with which the suggestion is submitted to our consideration. I am quite sure that the Committee are making a great sacrifice to us in listening to the case under the circumstances in which they are. I should not be justified on the part of my clients in requesting such a sacrifice, unless I perceived and they perceived that some direct public utility is likely to result from your proceeding this Session with the Bill. I believe, that in the year 1831, the evidence which had been taken in the previous year was, as a matter of course, referred to the Committee on the Bill in the subsequent Session; and at any rate we have the precedent of what took place last year, when a large amount of evidence was collected and was submitted to this Committee to aid it in its deliberations upon the Bills which have been before them this Session. But quite apart from this, we have so strong a desire upon our minds to put before the public, which will be done by having it inserted upon your notes, the general outline of our case hitherto not thoroughly examined into by any tribunal, and we consider that to be an advantage so great, that with the utmost possible regret as regards the convenience of the Committee, it is our wish that you should proceed. I trust, under these circumstances, that you will do me and my clients the justice to believe, that if we were not under an imperative sense, not exclusively of the advantage to ourselves but also to the public at large on the subject of the supply of water to this particular district, we would not wish you to hear our case.

Mr. Serjeant *Bellasis.*] I understand when I was out of the room a suggestion was made by the Committee, that only a certain portion of time could be allotted to this inquiry.

Chairman.] We will go on with the case, if the promoters of the case wish it; that is our intention.

Mr. Serjeant *Bellasis.*] The Committee will see the advantage which the promoters of the Bill will thereby have over the opponents of the Bill, because the case of the promoters of the Bill will be heard, whereas the case against the Bill will remain unheard.

Mr. *Hope.*] That is the misfortune of the circumstances in which we are placed. When you speak, sir, of six days, I presume, if Parliament were to continue to sit till the middle of July, you would not impose that limit upon yourselves.

Chairman.] We have told you that the time of the Committee is at your service.

Mr. *Hope.*] For six days.

Chairman.] I only meant to state to you a probability; we are certain that we shall be able to give you six days; we have no certainty as to a greater time, but we are willing to sit a greater time if there is a possibility of doing so. May I at the same time remark to you, that you will not forget the rule which the Committee have laid down with regard to evidence being repeated upon the same subject; and also with regard to cross-examination, that we shall not permit any cross-examination to be made by any counsel, unless they have been present in the room during the examination in chief?

Mr. *Hope.*] That is rather for my learned friends.

Mr. Serjeant *Bellasis.*] Unless under special circumstances, of which the Committee will judge when the time arrives.

Mr. *Hope.*] Sir, the object of the Bill, which, so near the end of the Session as we have heard it to be, I have now to offer to you, is for obtaining a supply of water from Bushey Meadows, near Watford, to the extent of about 8,000,000 or 10,000,000 gallons a day of spring water, which, we are prepared to maintain against all comers, is a supply infinitely superior to any which can be obtained within a reasonable distance of the Metropolis; with that water we propose to supply the West and North-Western Districts of London, and the suburban districts, including about 60,000 persons, at high-pressure, and at charges which with relation to the charges of the Companies now in possession of the field before this Session was a moderate charge, which, even under the reductions which the Committee have imposed upon those Companies, will show favourably, and which at any rate is in the hands of the Committee as to the mere question of amount. The history of the undertaking which I have to represent before you is this: in the year 1840 a gentleman of the name of Paten submitted to a Committee of the House of Lords a plan for procuring water from Bushey, by the means of wells and borings sunk in the chalk. Under the order of the Chairman of that Committee, the late Marquis of Westminster, a well was actually sunk and borings made by him, in order to ascertain how far his theory would be verified by the fact. My Lord Westminster's death prevented his reporting the result of that experiment to the Committee, and, consequently, the matter having been thus commenced, was left incomplete, and no judgment was pronounced upon the subject; but the well and borings then sunk by Mr. Paten verified his fullest anticipations, and a Company was formed, called the London and Westminster Water Company. Of that Company Mr. Robert Stephenson became the engineer, and in 1840 and 1841 he made reports to the Company which I shall beg permission of the Committee to lay upon their table, excusing myself from reading them to you, partly because you can do it, and I am sure will do it for yourselves, and partly because the whole of those reports hang so much together, and contain so much interesting matter, that I should be doing injustice to them if I were to make any particular selection from them. I had purposed to do so; but when I began to read, I found it impossible to stop. I say that with the utmost confidence. The whole of this scheme involves inquiry and considerations of very great nicety, and of very great interest indeed. I have no hesitation in saying, that if we were early in the Session, instead of so late as we are, you would find it a positive refreshment to turn to the inquiries in this case, strange as it may appear, from the interest attaching to them being in such direct contrast with the whole of the inquiries which you have hitherto had, and which really have not raised above one or two points of interest, whether of a chemical or of a natural kind, throughout the whole of their course. Referring, then, to Mr. Stephenson's Report, which fully justifies what I shall have to state to you with respect to the character of this scheme, notwithstanding the view which he then took of it, and which was most favourable, owing to the many difficulties which occurred about the year 1841, the capital could not be raised for the purpose. In 1843 the Government Commission on the Health of Large Towns, was put in operation; that checked private enterprise, and discouraged all parties from engaging in speculations of this kind; nor was it till 1848 that gentlemen, many of them large owners of house property in the north-west of London, associated themselves together for the renewal of the undertaking, and laid the foundation of the present Bill. In November 1849 provisional registration was obtained of the Company which bears the name on this Bill, namely, the London (Watford) Spring Water Company. In 1849 a Bill was presented, but by that time the General Board of Health was in operation; in operation to impede, I might say, for I think it has done very little to promote the inquiry relating to the supply of water to London. We were delayed in the House in consequence of the protraction of the question at large, which was caused by the Minute of the Board of Health, and finally our Bill was then rejected upon the Second Reading, by a majority of 196 to 90, all the Metropolitan Members voting for us, and the rejection of the Bill being due, there is little or no doubt, to the influence which the Board of Health Minute had produced upon the water question then pending.

Chairman.] That was in the same year, was it?

Mr. *Hope.*] In the Session of 1850. In the Session of 1850-51, we petitioned for a Bill, but the impression was general that the Government would introduce a Bill to supersede all the private Bills. You know what passed upon that subject last year; the result was to deter us from proceeding, and we did not go beyond presenting a petition for the Bill in the earlier stages of the Session.

In January 1851, the reference made by the Government to Professors Graham, Miller and Hofman, threw a light upon the question which we deemed very favourable to ourselves. I do not know whether reading a portion of that report will fall within the rule which you laid down of not repeating evidence; I am very unwilling to trespass upon you with respect to reading documents with which you are familiar, but there is something here so material as regards the subject of a supply from the chalk strata, that unless it be present to your minds at this moment, I will crave your leave to read it. It is in page 38 of the Report of the Government Commissioners, on the chemical quality of the supply of water to the metropolis; they say, "The chalk spring water unites the greater number of the desirable qualities already enumerated; it contains absolutely nothing of organic origin capable of further alteration or decomposition, and is therefore wholly unobjectionable on the ground of organic constituents. Its clearness and brilliancy also appear perfect, from the complete absence of suspended matter, and are highly attractive; possessing at all seasons the mean temperature of the year, the same water has an agreeable coolness and freshness which might certainly be preserved in a great degree by proper means of conveyance and distribution. The only other quality desired in a town supply, was softness; the chalk spring water is not naturally a soft water; in this respect it is inferior to the present supply, in one sense, being one-fourth harder, but it will be remembered, that the hardness of both is principally of the temporary kind, and that, after boiling, the advantage is with the spring water. It is however in the facility and completeness of the removal of this hardness, that the superiority of the spring over the river water is most apparent. The softening operation by the use of lime is applicable in all seasons to the spring water, which indeed adapts itself with singular felicity to that process, the carbonate of lime always precipitating with rapidity, and so complete as not to create a necessity for filtration. The chalk spring waters can thus be commanded with certainty under three degrees of hardness, which is probably the extreme limit attainable anywhere in England for a great supply. The lower price of lime in the chalk districts, and the reduction in the labour of mixing, must also bring the cost of the process considerably within the estimate formed at the Chelsea Works, and would not, we believe, form a greater addition than a sum equal to two per cent. upon the present price of water. This without allowing anything to be obtained in return for the precipitated chalk, which would certainly have some market value. The chalk spring water after being softened is an extremely pure water. It appears to be considerably superior even to the soft water from the streams of the Surrey sands. The chalk water alone is uniform in its excellence at all times, the sources of it lying beyond the influence of weather or season. In the judgment of the Commissioners this softened chalk water is entitled, from its chemical quality, to a preference over all others for the future supply of the Metropolis. It is no longer possible to disregard the chemical means of removing the hardness, or to represent them as impracticable on a great scale; they place the question of water supply upon an entirely new footing. Efficient as these means already are, we confidently look to their further improvement when the large results of practice come under the eye of the engineer and scientific observer. Another mode of partial softening without the consumption of lime or any other material, by the united action of air and granular carbonate of lime upon the carbonated water, has been already referred to, which may probably soon have its powers tested, either as an auxiliary to Dr. Clark's process, or as a substitute for that process when a less considerable softening is required." They then proceed to discuss the question of softening, and they conclude in this way: "The water recommended appears to approach most closely to the standard of all that is excellent in a town supply, and is worthy of the greatest efforts and grandest works to procure and convey it; but the sources are near at hand, and the water is attainable without difficulty or great expense. With such a noble application of the chalk spring water in view as the supply of the Metropolis, it would be a desecration to permit that water to be wasted in other uses, and most impolitic to allow the possession of it to pass into private hands. It is our deliberate opinion, which we would enforce in the strongest terms, that the much-desired and most necessary improvement in quality, in the London water, is associated with these sources of supply, and will depend upon their proper application to the uses of the public." That was the impartial Report of the Government referees, gentlemen whose names as chemists are well known.

Sir, the Committee having been appointed in the Session of 1851 upon the Government Bill and the Bills which were then referred to the Committee, and we not having prosecuted our case beyond presenting a petition for the Bill, an Order of the House was obtained, referring our scheme to this Committee as a scheme, with its plans and sections. The terms of the Order I have no doubt you will remember; they were, that we were to be heard before you upon those matters which constituted the substance of an intended application to Parliament: "London (Watford) Spring Water Company's Bill, plans and sections, and estimate of expense;

petition for Bill deposited in the Private Bill Office in November last in relation to the London (Watford) Spring Water Company, referred to the Committee on the Metropolis Water Bill." It was under those circumstances that we came before the Committee last year; but the decision of the Committee was, and I am not now about to question the propriety of that decision, that though referred to the Committee to be heard upon our own plans and sections, estimates and so forth, we were not to be at liberty to interfere in the general strife that was going on. We were consequently not allowed to cross-examine the witnesses in support of the Government Bill. As the Committee will remember, the Government Bill alone was considered last year, and that not completely, our case not being brought before the Committee at all. The case, therefore, has not been fully tried in Parliament, and, in truth, it has never been fully and fairly investigated anywhere in all its extent. The Board of Health investigation, from many reasons, we have cause to think not a fair one, as far as it went; and with regard to the report of the Chemical Commissioners, that of course is limited in a great degree to the question of quality, there being many other questions still open which have not been discussed before Parliament or any other tribunal. My chief reason for regretting this is, that it has led to a certain extent to the direction of the views of Parliament, and also of public bodies acting for the Government, to a supply of water from a source which we believe to be very much inferior indeed to the service which I have the honour now of proposing to you. Whatever advantages the Thames above Teddington may possess over the Thames below Teddington, we have yet certain information and evidence to show, that as compared with the water from chalk wells, it is really not to be named for a moment; and we certainly do feel, to a considerable extent, that it would have been for the public advantage, and also, I think, to the satisfaction of the Committee, if circumstances had so occurred as to allow of our case being heard before the determination of that particular source had been made, in reference to the existing Water Companies. We deem it, however, by no means too late to show you the advantage of this sort of supply, and that more especially, as the question of supply from the River Lee has been suspended for this Session; and, therefore, as regards the northern portion of London the large question still remains open as to how those sources of supply may be best attained.

Sir, with regard to the Bill itself, and the scheme previously to the application to Parliament in 1850, there were numerous meetings, both metropolitan and suburban, and there were petitions presented in favour of the scheme by 39,000 people. In this Session, the same petitions have not been presented, the promoters believing that they might refer to those petitions which were before presented, without going through the machinery of a second signature by the petitions. There has been, however, one petition from Marylebone parish containing 8,000 and odd signatures; that parish having, in the year 1850, appointed a committee of conference with the promoters of the Bill, as to the rates to be charged in the Bill, and having satisfactorily adjusted those charges according to the prices which are in the Bill at this moment, they have been uniformly warm advocates of the progress of the measure. Nor is that feeling confined to Marylebone. It has extended to St. Pancras, where a general feeling exists in our favour. With regard to the intermediate districts between Watford and London, they comprise Barnet, Bushey, Edgeware, Elstree, Finchley, Hadley, Hampstead, Harrow-on-the-Hill, Harrow Weald, Hendon, Kingsbury, Mill Hill, Pinner, Stanmore, Sudbury, Totteridge, Watford, Whetstone, Willesden, places which are now supplied from deep wells, or by rain butts and water carts, at a charge by the parties who convey it, and who sell it, I believe, at a halfpenny a pail. Harrow is in want of a water supply so much, that a private subscription has been lately opened to obtain it. As to the other places, the need is indeed very great, as will be proved by witnesses, and tends to a considerable extent to check the progress of building in a northward direction, for which otherwise the facilities are great, and the attractions considerable.

With regard to the supply to the Metropolis, we propose to supply the district which is coloured green upon the map behind you, which is also represented on small maps which shall be at your service if you think they will be useful to you.

Mr. *M'Cullagh.*] Is it the whole district within the green margin proposed to be supplied?

Mr. *Hope.*] Yes; the larger part of what appears upon that map on the north side of the Thames. It is needless for me to remind the Committee that within the Metropolitan District which we seek to serve, competition is a thing unknown; that a partition of districts has taken place, by reason of which the existing Companies agree as quietly with each other as if they were carrying on a business at distances of 100 miles from each other, instead of being actually in the same streets. To say that that system of dividing the territory has acted well for the public, would be, I think, rather a bold assertion; but it is not so much my object now to run counter to the old Companies, and to expose their defects, as to show how, with the best intentions on their part, it is impossible for them to give to the Metropolis, from their present sources of supply, anything like the water, in point of quality, that we are prepared to give, and which can be obtained from our sources alone. I may, however, mention, that certainly, if competition be desirable, (I do not mean a wild and ruinous competition, but a competition which proceeds by raising the taste of the consumers, and familiarising them with a better article at a moderate price,) if such a competition be under any circumstances desirable, we are in a position to show that this district does require that competition, and we are the parties who can offer it.

I have alluded to the so-called improved supply from Teddington. We have had the water supplied by the Lambeth Company after filtration submitted to the test of the microscope, and we have discovered divers inhabitants of that water; not the whole of those which appear upon the paper in my hand.

Chairman.] Is that the production of the Board of Health?

Mr. *Hope.*] No, sir, we did not take their evidence, I assure you. We have discovered about three-fourths of the different kind of animals described upon this paper, I believe as many as thirty different varieties of animal life, in the Teddington water of the Lambeth Company, to say nothing of the vegetable productions, upon which, in fact, the animal life is to a considerable extent sustained.

Chairman.] Is that after filtration?

Mr. *Hope.*] After filtration; this applies to water filtered by the Lambeth Company, and taken from their pipes before it is passed into a cistern. There are between thirty and forty kinds of animalcules, much dead and decaying matter, and also growing plants, all detected without difficulty by the use of the microscope. With regard to the characteristics and the natural dispositions of the different animals, I shall not venture to offer you any information; but I am told that those gentlemen who are more familiar with the subject have discovered some particular classes of animals to whom the interior of the human frame is not a disagreeable abode for a permanency; not as passengers merely, but as lodgers. Sir, the discoveries thus made enable us to assure you that no precaution whatever, exclusion of light or other means, filtration nor subsidence, will enable the existing Companies to get rid of them altogether. Upon this point, I will refer you to the witnesses whom we shall produce: you may, by the exclusion of light, stop the growth of some of the vegetables, and kill some of the insects; but by that very process you will produce decay, and decay will produce corruption in the water, nor will you by the exclusion of light prevent the formation of the fungoide class of vegetables, which will exist in darkness just as well as in the light.

Now, sir, with respect to the proposed sources of supply under this Bill: the place from which we propose to take the water is Bushey Meadows, near Watford, and we propose to draw it from wells and deep borings, taken from the surface to subterraneous springs, which are found in that vicinity, and which springs are formed and fed by the percolation of the rain water falling upon the chalk strata of the higher ground, in a north and north-western direction. The Chiltern ridge extends 17 miles in breadth, and is 80 miles long. The hills rise in the west and north-western direction round Bushey; at some places those hills rise more than 750 feet above Bushey Meadows. The chalk is for the most part covered with pervious soil, and is itself so porous as immediately to absorb water; in fact, of the whole bulk of chalk in this district, speaking roughly, it may be said one-third consists of pores. After the heaviest rain, the ground in the chalk district can be ploughed within half an hour after the rain has ceased. The surface streams are very few and small, and remote from each other. The bridges are very small in point of water way, and within the memory of the inhabitants, very few of those streams, and these only after a sudden thaw of snow, have ever been flooded. That is in direct contrast with those districts which have clay instead of chalk for their basis, and we shall be able to contrast the clay formation, and even the Bagshot sands in this respect, in a way which I think will satisfy you of the exceeding difference which exists between the amount of surface water to be found in clay districts and in the chalk districts. We find that in the Crag formation, the length of the streams and the river courses per square mile is 1,709 yards; on the Bagshot Sands, 1,729 yards; on the London and Plastic Clay, 2,057 yards; on the Chalk and Upper Green sand, 782 yards per mile; on the Hastings Sand, 2,135 yards;—giving, therefore, an immense preponderance of surface water, or visible streams, and easily accessible streams upon the clay, and indeed upon all the other formations, as compared with what we find upon the surface of the chalk formation. This is to be explained by the fact of the porousness which I have already mentioned as pervading the chalk strata. The rain water, in fact, goes down through the chalk at a very slow rate of progress no doubt, but still finding its way down till it is arrested by the clay stratum, which is below the chalk. Both this clay stratum and the lines of stratification in the chalk incline towards Bushey Meadows, and the rain as it finds its way down, gradually forcing out at the lower depth, the water held by capillary attraction in the pores of the chalk, fills and feeds with water the fissures leading from the Chiltern ridge, to beneath Bushey Meadows. Upon both the plans upon the wall you will see the dip of the strata, and between those strata fissures are to be found from a quarter of an inch to two feet and four feet thick, in which the water gradually descending from the higher ground by percolation finds a vent, and it is by means of the accumulation of that water in the neighbourhood of Bushey Meadows the subterranean springs are formed. Of course, of the water which falls in this district, a portion is absorbed by vegetation, a portion goes to the surface springs, and a portion to the streams which show themselves above the ground; but there can be very little doubt that the larger part of the water which accumulates, and to an extent which I will describe presently, in this district, and percolates through the chalk, does not find a vent upon the surface, nor even in the immediate neighbourhood of the chalk formation with which we are now dealing, but passes through the chalk strata in different directions, so as to be found issuing upon the sea coast in large quantities as far to the north as the Wash, as far to the east as the Isle of Thanet, and as far south as Brighton, Beachy Head, and also the neighbourhood of the Bill of Portland. It also gets through the chalk covered by the crag and the London clay, at points in the neighbourhood of Ipswich, Colchester, and upon that coast. This much is certain, that calculating the quantity of rain falling upon the chalk formation, it is impossible to account for the disappearance of that water in any other way, except by those distant issues, and the waste of the accumulated water upon the shore of the sea at those points where the dip in the strata and the facilities of the passage through the chalk afford the vent which is checked in other directions by the intervention of solid masses of clay and other impediments. I am, of course, describing to you, generally, what the witnesses will fill up in detail; but we have the most conclusive evidence of the immense abundance of the outflow of the water at those points, which will be coupled with evidence of the stratification leading to the points where the water issues, which can leave no doubt at all that the water which is found at the points named on the coast is the very water which has fallen upon the Chiltern Hills. In the chalk hills of the district connected with Bushey Meadows, the top of the chalk (and this is a material point), for depths varying from 40 to 60 feet, is knobly or broken, so as not to present that strong, and in one sense impermeable stratification of chalk which, at a lower depth, is found. Below the knobly chalk, the layers incline in the way which I have described to you, with intervening faults, crevices, and interstices; through the body of the chalk, the water percolates down very slowly, filling the crevices, and feeding the springs at Bushey, that I have described, and which are attained only by borings of from 110 to 160 feet in depth. The intervening strata between the depth at which you find the springs at Bushey, and the surface, if you except the top or broken chalk, present a very great impediment indeed to the water descending vertically; because, although the surface chalk is of itself capable of absorbing immediately the rain water which falls upon it, yet the stratification being such as you see there, the solid portion of the chalk in the vicinity of Bushey Meadows, is opposed to the vertical descent of the water, whereas, where the water enters at any one of the outcrops of the stratification, it there finds its way into the fissures, and is led below Bushey Meadows by a quantity of inclined planes ready made for the purpose. This point is materially in connexion with the question of the abstraction of the water from the surface by means of such wells as we propose to bore; our view is, and we shall support it by evidence, that if you are to draw the water only from the lower depths, you can completely hinder those wells from affecting the surface springs and streams. To effect this, it is simply necessary to take the precaution of seeing that your pumping process shall not affect the superior or knobly stratum of chalk; that you shall pass your shaft in water-tight divisions down through that upper and loose stratification till it enters into the more compact stratification, the fissures between which contain totally different supplies from that which is to be obtained upon the surface, or near the surface, by means of shallow wells. For that purpose, a clause has been introduced into the Bill (clause 45), obliging us to protect our wells in their descent through the looser stratification above, so as to prevent the water passing into those wells at a less depth from the surface than 60 feet, which we estimate to be the extreme depth of the loose knobly stratum.

As to the quantity of water derivable from such sources as I am describing, I believe I may say it is, for practical purposes, inexhaustible. In the south-east of England there is a surface of chalk range almost bare; that is to say, covered either with a pervious soil, or with a soil which does not prevent the percolation of the rain water, which may be reckoned at about 5,000 square miles. Taking the rain-fall in this district, which I believe will be proved to you to be very similar to the rain-fall upon the neighbouring districts, being rather greater, of course, in the higher ranges, at 26 inches, and allowing that only 10 inches of that water in the course of a year reaches the lower fissures in the chalk formation, you will find the enormous result from the 5,000 square miles of 2,000,000,000 gallons per diem. There, as I say, I assume that only 10 inches of the 26 inches of rain-fall actually goes into the lower fissures. That quantity, I am told, represents just about, or rather more than three times the flow of the Thames in dry seasons over Teddington Lock. With respect to the scheme immediately before you, we do not claim credit for the whole that those 5,000 square miles would yield. We do, however, claim credit for 1,200 square miles; and taking the yield of that upon the same data as the yield of the 5,000 square miles, at 10 inches, we find that we shall have a produce of more than 400,000,000 gallons. The evidence in support of this will, I think, be conclusive. I know it has been very carefully arranged, and I have the utmost possible confidence in it myself.

It may be proper to fortify our deductions by looking to that which actually takes place in the district at present. A very considerable quantity of water is obtained by deep wells in this district already; in fact, curious as it may appear, surface streams are actually produced by borings from the depths of the chalk strata. The rain water passing, as I have described to you, below the surface, is in several instances, by mechanical means, recovered from the depths of the earth, so to speak, and in overflowing springs is turned into a superficial channel, so that you have actually borings doing the work which in the clay districts the natural streams do, for mill-owners and others who use those means of supplying themselves. In previous inquiries, you have had your attention drawn to the proceedings of the New River Company in connexion with their small wells at Chadwell and Amwell; in which instance, in the driest weather, from two comparatively small wells, they draw 4,000,000 gallons per day, and they have never, I believe, fallen under that amount. It certainly is somewhat remarkable, that this was the first point to which water legislation, so to speak, for London, except the Old London Bridge works, was directed; Sir Hugh Middleton having formed a plan in the first instance in reference to that very source of supply from the chalk strata, which I am now, after an interval of so many years, bringing under the notice of the Legislature. From the account I have given of our plan hitherto, if I can support it by evidence, and I think I can, you will be satisfied that we are not about to interfere with any surface wells or any surface streams whatsoever; but our plan is to supply London from a depth at which the water is found now in large abundance; which water, if not applied to this purpose, must continue to be wasted on distant points of the coast, and pass into the sea.

Having said thus much of the quantity, I will now say a few words upon the quality of the water. The rain, falling on the surface of the chalk, as I have said, is immediately absorbed; but though the absorption takes place at once, yet the percolation by no means proceeds so rapidly. It takes, in fact, as was observed by the Government chemists, many years to effect a thorough percolation through chalk; but in the process of percolation, at every change of the barometer, on account of the construction of the chalk strata, the water comes in contact with a changed atmospheric air; in fact, it may be said that the chalk hills act as the human lungs do, inspiring and expiring by turns, according to the state of the atmosphere above them. When the barometer falls, the chalk, which has those innumerable fissures which I have described, at intervals between the strata, gives out air; when the barometer rises it takes in air, so that, as I have said, the chalk strata do in fact perform the function of the lungs; they are constantly breathing according to the state of the atmosphere with which they are in contact. The effect of this upon this water, in the long course of percolation which it has to go through, is one which produces a result which I shall have presently to describe, but for the moment I would rather pursue the question as to how the percolation proceeds. It has been well ascertained that every yard in depth of chalk will hold one foot of water; so that if you were to pour upon a surface of broken chalk, one yard in depth, one foot of water, assuming of course that the lateral size of the chalk and the water corresponded, so as to make an equal pressure throughout, it would absorb no more than one foot of water, and if you poured more water upon the top of the chalk, the water would be forced out below. That will give you some idea of the ratio at which the percolation proceeds. If you will now take the average depth of the chalk as 150 yards, and the rain-fall absorbed each year at 10 inches, according to the rule which I have laid down, which will be proved as to the amount of water which can be held in a given quantity of chalk, you will find that each year's fall, gradually displacing or driving out at the lower depth the water with which the pores of the chalk are filled, will take almost centuries to reach the subterranean springs at Bushey. The Government Commissioners say, "The rain falling upon the downs and elevated ridges is rapidly absorbed by the soil, and enters the chalk beds through the porous and amply-aërated channels of which it circulates, much of it probably for centuries, before subsidising to the lower level of the valley springs. Hence a full decomposition of any alterable organic matter, and the assumption by the water of a constant and uniform character." And as a matter of curiosity, this question has been calculated out somewhat carefully; and I am able to state to the Committee, that the water which we are now pumping at Bushey Meadows, if our calculations are in any degree correct, and certainly they must be correct, is water which must have fallen upon the surface about the reign of his Majesty King Charles the Second. I am justified in saying, therefore, that we are offering to the public prime old water. It assumes an amusing form when so put; but this much you will be satisfactorily assured of, I think, beyond all doubt, that at any rate the period taken for the purposes of percolation to the depth I have mentioned must be a very considerable one, if you bear in mind its constant exposure to the different operations of the air during that course, you will then understand more readily how it is that the water when it is discovered in these caverns is one of the purest and best imaginable. The constant action of the air under different circumstances upon the water in these strata oxidizes the whole of the organic matter; the water becomes perfectly bright; it contains nothing putrescible, and what is another point of very considerable importance, it acquires the mean temperature of the year, which is 49° Fahrenheit, and possesses that at the moment when it is drawn from the source; in fact, it is spring water of the highest quality, and described as such in the Report of the scientific Commissioners which I have already read to you. As contrasted with the only other proposed supply of so-called spring water, that of the Surrey sands, you will find the Surrey sand water possesses no one of those three principal qualities which distinguish spring water from other water. The Surrey sand water varies with the temperature; it is 33° or 34° Fahrenheit in the winter, rising as high as 71° to 72° Fahrenheit in the summer. In warm weather it shows organic putrescible matter, animals and plants, and after rain it becomes muddy;

in fact, it is not spring water at all, or if spring water in any sense, it is diluted spring water, a very large portion of its constituent elements having been drawn from the surface, and that without undergoing such a process of percolation and aëration as I have described to take place in chalk water. When the water is first taken from the springs, it is, as you have heard from the chemists, a hard water. It contains 18 grains of chalk in solution, in the form of bi-carbonate of lime; but this is taken out by a simple and cheap process—I mean Dr. Clark's process. He himself will be here, and will be able to give you any information which you may think fit upon the subject. After the application of this process it becomes as soft as rain water, but yet retains all its freshness and brilliancy, as you will see from the specimen upon your table, which is a specimen which has been subjected to the process of softening. It does not act upon lead, even under circumstances where filtered, Thames Ditton water and others which are applied to the service of London, do act upon it. It preserves an even temperature, being 18° colder in summer than the Thames; and 18° warmer in the winter than the Thames, and so not liable to freeze in the pipes, which is a matter of some considerable importance in a case of constant service. In boiling it produces no fur. The water which is now upon your table might stand with the stopper out for weeks, or even months, without your discovering any incrustation, any deposit, or even the slightest discoloration. With regard to vegetable matter and insects; there being no food for insects, there are none there, and no opportunity for vegetation to form itself, and I have no hesitation in saying, that if the information I have received be correct, it will be impossible for you to find anywhere; I do not say in the neighbourhood of London, but almost anywhere in this country, any water which has a right to compete with this water in the most essential qualities for the use of human beings.

The plan of the Company I represent, and which proposes a capital of 350,000 *l.*, is to draw the water from the wells which I have described at Bushey, Bushey being itself about 14 miles in a north-westerly direction, from Cumberland Gate, Hyde Park, and to pump it from those wells, after having been softened, to a heath, called Stanmore Heath, about three miles from Bushey Meadows, in the direction of London. At that point it is proposed to have a reservoir of an average depth of 20 feet, capable of containing about 10,000,000 gallons. The bottom of the reservoir at that point will be 390 feet above Trinity high-water mark. We pump the water, after it has been softened, in 36-inch pipes, of cast iron; and as the water in the wells when lowered by extreme pumping still stands 126 feet above Trinity high-water mark, the lift from the lowest point at which the water is got in the wells to the bottom of the reservoir will be 264 feet.

Chairman.] Are the filter-beds at the source of the water, or on Stanmore Heath?

Mr. *Hope.*] We have no filter-beds; we have softening reservoirs only. We shall be able to satisfy you that filter-beds in this case are not needed.

Chairman.] It will be nearly as high above Trinity datum, when you have got it into the reservoirs, as it was originally below it.

Mr. *Hope.*] Even originally it was above Trinity datum. The height of the water in the wells when lowered by pumping to the extreme point would be 126 feet above Trinity high-water-mark. We propose to make the reservoir 390 feet above Trinity high-water mark. The chemical commissioners in reporting upon the subject, and speaking of the softening process, in the passage I have already read, speak of it as being so effectual and complete as not to create any necessity for filtration; so that in lieu of filter-beds our softening process intervenes. From the reservoir upon Stanmore Heath, it is proposed, by 36-inch cast-iron pipes, to convey the water to another reservoir at Child's Hill, near Hampstead, about three miles and a half from Cumberland gate, the bottom of which reservoir is 302 feet above Trinity high-water mark. That reservoir, it is proposed, shall be consructed to contain 10,000,000 gallons; and from thence the water will be conveyed in a 40-inch pipe by the Finchley-road, to Oxford-street; and as the reservoir at Child's Hill is at that altitude which I have just given you, we shall be enabled to give constant service 110 feet higher than any other Company; let me add, without any extra charge whatsoever for high-service. The interval between Stanmore Heath and Child's Hill being upon the London clay, a great want of water exists there; and we propose to supply Edgware, and other intermediate places from our main pipe; Elstree, Highwood Hill, Totteridge, Harrow, Stanmore, &c., are to be supplied by means of a reservoir on Stanmore Heath, but at a higher altitude than the other reservoir which I have described. It is proposed to give a high level reservoir upon Stanmore Heath, which would be 490 feet above Trinity high-water mark. This reservoir will also command Clay Hill, Bushey and Watford. This high-level reservoir will also enable us to throw the water into a service reservoir at Hampstead, which will contain 500,000 gallons for the use of that place. The supply reservoir at Hampstead will be 416 feet above Trinity high-water mark.

With regard to the quantity we propose to supply, we have been influenced by two considerations; one, that as this is a novel mode of supplying water to the metropolis, it would be unadvisable to launch the scheme upon so large a basis as to aggravate the opposition, the unreasonable opposition as we hope to show you, of those who think that our process will abstract water from the surface; another is, that the districts being already to a considerable extent occupied by other Companies, we were unwilling to run counter to them to any extent not absolutely necessary for the purpose of giving that peculiar supply which we desire; and our plan has been constructed, therefore, with reference to those two considerations. We propose to pump up from 8,000,000 to 10,000,000 gallons a day; say on an average 8,000.000, of which 1,000,000 will be consumed in the upland district, now wholly unsupplied, and supposing the suburban districts increase by the increase of houses, we may assume that 2,000,000 gallons before many years will be required in the upland districts, leaving a supply of 6,000,000 for the metropolis. Our calculation is, that we shall be able to supply 100,000 houses and 800,000 persons with 60 gallons per house of water so preferable to the water now supplied, that for drinking purposes, and purposes of personal ablution, it will be sure to be preferred, even though the consumers were to continue to have their supply for other purposes from the existing companies; this is one of the points which we distinctly contemplate by our Bill. By clause 22, it is provided, that "The Company shall, at the request of the owner or occupier of any house or part of a house, of the annual value of 20*l.* entitled to demand a supply of water as aforesaid, and receiving and paying for a supply of water from any other Water Company, for general domestic purposes, furnish to such person a supply of soft spring water, for drinking and personal ablution only, but not including baths, at a rate not exceeding one-third part of the rates hereinbefore specified." Now, sir, our view is this: that it is very likely indeed that this kind of supply will be very much desired by the inhabitants of London; and I am quite satisfied that any gentleman who is given to drinking water, which is not a universal taste, and who has had occasion to call for a glass of water during the late rains which have afflicted or rather relieved London, will be very glad indeed to pay some small extra amount for the mere purpose of having water which he can look at without disgust, in order to drink and wash his teeth with, and perform his ablutions with. Our system of supply being a constant service system, of course will require no new cisterns, no apparatus of that kind, and we have the confident expectation that we shall be hailed, as we come into the metropolis, and asked to a very large extent indeed for that peculiar kind of supply which may be perfectly well given without interfering with the existing supply of the Water Companies; namely, by the introduction of a short service-pipe, chiefly designed for the purpose of supplying water for drinking, for which people are obliged now to go to wells and pumps in the neighbourhood, where the Water Companies water is foul and bad, and we anticipate that we shall from that source alone derive a very considerable revenue.

Having described to you our objects, and the limited amount of supply which we propose in the first instance, I should certainly have thought that the existing Companies might well have accepted this great boon to the public which was likely to be, to so small an extent, an interference with themselves; and I can only attribute their determined hostility to us to the apprehension that our water once tasted, their own will fall to a discount, from which nothing can recover it. In other words, by giving the inhabitants of London a taste of what pure spring water is, they will either be forced to go for the spring water themselves, or lead, by resisting the introduction of that spring water, to an extension, and a very large extension indeed, of the supply which this Company now proposes to give in a more limited form; this is the kind of competition which I say in my opinion is a lawful competition. I am the last man in the world to advise an unreasonable competition: I know it ends in combination, but a competition which is based upon the superiority of the supply, such a superiority of supply as creates a taste for the better article and indisposes people to the inferior article, which it must do, such a competition, without leading to ruinous rivalry, without leading to combination, for combination will be impossible where the quality of the water is so dissimilar, would stimulate to the greatest possible degree the exertions of the other Companies, and so benefit the public, not by way of collision and conflict as to rates and profits between the two competing Companies, but by a collision between a good article and an inferior or bad article; and supposing combination at length to ensue—for I shall not pretend that my Company is more virtuous than all other Companies in England, they all of them are quite capable of combining—that combination, were it to ensue, it must be the basis of the best supply, because the public would not endure a combination to force upon them a lower quality of water, when an increased supply of a higher quality might be obtained so easily as it can be obtained from this district. I mention that subject respecting competition, because the petitions of the existing Water Companies are full of their services to the public and their great expenditure; of their great profits they say nothing; of their great expenditure they speak in serving the public hitherto in London, and they appeal to you that old and faithful servants of the public as they are, should not be subjected to competition because of those long services, totally unrequited as they have been by the public hitherto. Now, sir, it has long been settled, and I suppose is not to be unsettled now, especially by this Committee, that competition affords no *locus standi* whatsoever to Water Companies; so that even if their merits be as great as they describe, and their expenditure as enormous as they describe, and no return has been had upon it, which is a question I will not go into, but leave it for you to deal with, still even supposing them to be suffering servants of the public, as they choose to depict themselves upon the face of the Petition, the rule of Parliament is imperative, that competition gives no right to be heard before you, and I presume that to that universal and inflexible rule of Parliament, you will adhere. I shall therefore pass by the Water Companies, merely saying that when the time comes, if they shall venture, which I think they will not in the face of so well established a rule to insist upon being heard, it will be my painful duty to object to their being so.

But we have other petitioners, and to their cases I will now allude. The first is the petition of the Most Noble Algernon Duke and Earl of Northumberland, which is a formidable name to have against one, no doubt. The petition sheweth, "That a Bill is now pending in your

House, intituled, 'A Bill for supplying the Cities of London and Westminster and suburbs and other places with Pure Spring Water.' That the private property of your petitioner will be prejudicially affected by the passing of the said Bill, and the water which now supplies his mills and other property will be seriously diminished, to the great injury of your petitioner, if the said Bill be passed into a law." Now his Grace's mills are not within five or six miles, as I am informed, of Bushey Meadows.

Chairman.] Upon which side are they?

Mr. *Hope.*] Towards Rickmansworth. They are not shown upon that map. They are upon the Colne and its tributaries; the Colne being a stream which, as I am informed, is at present fed, to the extent of three or four millions of gallons, by means of wells similar in principle to those which we wish to use. That stream is at present so inadequately supplied by surface water, that the other, and completely separate source of water to which we also seek to go, is now applied to for the purpose of creating a superficial stream above ground. The petition goes on to say, "That the district proposed to be supplied under the authority of the said Bill comprises the larger portion of the Metropolis north of the Thames, in addition to several other towns and villages." Of course this allegation having reference to the large extent of abstraction of water is met at once by the fact that we propose to abstract only 8,000,000 or 10,000,000 gallons a day. "Thirdly, that the water proposed to be supplied to this large district will, in fact, be abstracted from the mills and lands of your petitioner and others." Now, as it is alleged by his Grace as a fact, we shall have to meet it with counter facts, and shall show you distinctly that there is no danger in the slightest degree if the wells are cased, through the porous or rather the broken parts of the stratification, either of the springs or the surface streams, being interfered with by our pumping operations. His Grace goes on to say, "That it has been proved by actual experiment that the abstraction of a much less quantity of water than would be required for the purposes of the said Bill, cannot be obtained from the sources from which the said Bill authorises the Company to obtain their supply without serious damage to your petitioner, and the owners and occupiers of the neighbouring lands and mills, by the abstraction of the water necessary to the occupation and use of their property." We cannot, of course, know to what precise experiment his Grace alludes here. All we can say is, that actual experiments, made by ourselves, have proved precisely the reverse; and we suspect, if any instance be adduced against us, and I think there is another gentleman who does produce one, it will be found to arise from the circumstance, that in the more porous and broken strata, that protection, by casing the wells, has not been afforded which is no doubt essential to prevent the abstraction of surface water. "That the proposed works will abstract a large body of water which now flows down the River Colne and its tributaries;" that we absolutely deny. That the Isleworth Mill River, and the mills and property on its banks and connected therewith, for a considerable distance, are the property of your petitioners, and the River Colne is almost the only source from which the Isleworth Mill River derives its supply of water." We have no fear upon this question, as to the abstraction from the Colne. The Colne itself is, to a considerable extent, now fed from subterranean wells by way of pumping, and for anybody who will go to that depth to pump, there is enough to supply as many mill-owners or proprietors as you may please to imagine. Then there is the allegation, "that a proper and sufficient supply of pure and wholesome water cannot be obtained for the district." Then, "that the greater part of the district included in the said Bill is already supplied with water, and no public advantage is likely to arise from the passing of the said Bill, as experience has proved that the expenditure of capital in laying two sets of water pipes in the same district is more likely, eventually, to increase than diminish the cost of water to the consumer;" that is a question purely for the Committee, I apprehend. "That if any increased supply of water be desirable to the district included in the said Bill, the same might be obtained from other available sources, which would be equally beneficial to the public, and less prejudicial to private interests." I cannot help thinking that the gentleman who was honoured by his Grace with drawing this petition, must have had some other Company in his eye; at any rate, we are prepared to prove distinctly to you, that there is no other source at all similar to this; I suspect he points to Teddington; but, however, we shall know in the course of the inquiry more accurately, to what particular source his Grace refers: "That the sum estimated as the cost of the works authorized by the said Bill is insufficient for the execution of the works." That is a question of evidence with which nobody can be more capable of dealing than the Committee, to whom so many matters of that kind have been submitted. "That the scheme authorized by the said Bill has been already adjudicated upon and rejected by Parliament." That is to say, it was refused a second reading under the circumstances which I have explained to the Committee. "That the Subscription Contracts are not such as can be safely relied on;" that is a general and sweeping allegation against the Subscription Contract. I shall be perfectly satisfied to rest my case upon the character of the subscribers to that contract, which I think you will find to be as high, both in point of property and otherwise, as can well be required; I do not think it necessary to go into the subject at this moment; you will find that owners of very considerable landed property are among the chief promoters and directors of the scheme, and some gentlemen the extent of whose means is entirely beyond all doubt.

The next petition is that "of the undersigned Owners and occupiers of Land, houses and mills in the counties of Hertford, Buckingham, and Middlesex, in the vicinity of the River Colne, and of Fisheries in the said River." Now, all those are more or less distant from the point of Bushey

Meadows; they rely, therefore, generally upon the same view as his Grace the Duke of Northumberland has taken, namely, that by sinking wells into this chalk stratification, at the depth we propose, there must be a general abstraction of water from a larger district around. That is, as I say, a simple question of evidence, and upon that evidence, of course, the Committee will decide. They allege, "that it is the opinion of scientic men, that the speedy and certain result of such powers being granted will be, that the springs supplying the said river and its tributaries, and all ponds and ornamental waters throughout the valley, will be, in a great measure, intercepted and exhausted." "That the projectors of the present scheme are not proprietors of any adjacent land, nor possessed of any right, title or interest, in the water they propose to take and vend to the citizens of the Metropolis." There is an allegation also, pointing to the enormous quantity of supply needed, "That by the Government Metropolis Water Bill, as well as by other Bills recently introduced into your honourable house, the existing Water Companies now supplying the Metropolis with water, will take their supply from unexceptionable sources, and will be placed under regulations or restrictions." "That the estimate is insufficient; that the preamble of the Bill cannot be proved," and so forth. This is signed by my Lord Rokeby, Mr. Smith, Mr. Carpenter, Mr. Howard, Mr. Norris, Mr. Ibbotson, Lord Essex, Lord Verulum, Mr. Williams, and so forth; and among them Mr. Dickenson, who has opposed every attempt which has been made by any body which could affect any water in that part of the country in which he is the owner of some paper mills, and who, notwithstanding long experience of the fallacy of his calculations upon this subject, seems to be still under his original impression, which leads him to oppose everything in the way of water supply anywhere within the district: I think he would not let the London and North Western Railway Company make a tunnel, for fear that it should hurt him, or the Grand Junction Canal Company take water, for fear that it should have some effect; and I believe he has an injunction against somebody somewhere for having sunk a well upon his own land, which he thinks will entirely deprive him of a supply of water to his mills. This is a pure question of evidence. I believe, in one petition, reference is made to a case in which an experiment has been made, in what is called a similar well; but we shall be able to show you that it is deficient just in that one quality, or rather in that one particular, which is wanted for the protection of the millowners, namely, the fact of its being cased to a considerable depth, and made water-tight below the porous portions of the strata.

The remaining petition is that of Mr. Marjoribanks, of Bushey Grove, in the county of Hertford, the owner of Bushy Meadows, upon which it is proposed to erect these works. His, I believe to be the only case, strictly speaking, which has a *locus standi* before you; because as to these gentlemen who are the owners of mills and streams, if you admit such opposition at a distance of five or six miles in different directions, it is quite plain you may admit it over the whole of similar stratification, and carry the opposition therefore from the land immediately in question, to any district which is interested in the watershed of the Chiltern Hills: in other words, you reduce it to an absurdity from the extent to which the principle is carried. Mr. Marjoribanks, being a landowner, undoubtedly has a right to be heard. He objects to the erection of the works proposed by us, the pumping engine and so on, as being likely to destroy the amenity of his mansion-house. The answer is, that these works cannot be seen from the mansion-house; they are at a considerable distance from it, and as regards the particular locality in which we seek to place them, it is a pure question of compensation, which a tribunal less important than that which I have the honour of addressing is quite competent to determine.

I believe I have now gone through the petitions against this Bill; I have laid before you the main points of objection; we are ourselves satisfied that those objections proceed upon a misapprehension, and which I hope to remove even from the minds of the objectors, if they will be good enough to attend personally; from their agents' minds it is more difficult to remove the impression. We have put into the Bill such clauses as we think will give efficient protection, and we are perfectly ready to put in such further clauses as the Committee may think fit, where they are not absolutely destructive to the scheme which I have the honour to submit to you. Now, sir, apologising for having detained you at such length, we shall proceed to call the witnesses, and we hope to be able, even within the most limited space you have mentioned to us, to lay before you in evidence the main features of this scheme.

Mr. *Glaisher* was examined.

Note—The evidence given before the Committee is published by order of the House of Commons, in a Blue Book, for the use of Parliament and the public.